VERIFICATION REPORT
VEMA S.A.

VERIFICATION OF THE JI PROJECT

IMPLEMENTATION OF ENERGY SAVING MEASURES AT PJSC «LYSYCHANSKIY GLASS FACTORY «PROLETARY»

1rd periodic
for the period of January 2009 – June 2011

REPORT NO. UKRAINE-ver/0358/2011

REVISION NO. 01

BUREAU VERITAS CERTIFICATION

Date of first issue: 19/08/2011	Organizational unit: Bureau Veritas Certification Holding SAS
Client: VEMA S.A.	Client ref.: Fabian Knodel

Summary:
Bureau Veritas Certification has made the 1st periodic verification for the period of 01/01/2009 – 30/06/ 2011 of the JI project "Implementation of energy saving measures at PJSC «Lysychanskiy glass factory «Proletary», project of VEMA S.A. located in Lysychansk city, Luhansk Region, Ukraine, and applying the JI specific approach, on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

The verification scope is defined as a periodic independent review and ex post determination by the Accredited Independent Entity of the monitored reductions in GHG emissions during defined verification period, and consisted of the following three phases: i) desk review of the monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the verification process is a list of Clarification, Corrective Actions Requests and Forward Actions Requests (CL, CAR and FAR), presented in Appendix A.

In summary, Bureau Veritas Certification confirms that the project is implemented according to determined PDD. Installed equipment that is essential for generating emission reductions runs reliably and is calibrated appropriately. The monitoring system is in place and the project is generating GHG emission reductions. The GHG emission reduction is calculated without material errors, and the ERUs issued totalize 80775 tons of CO_2eq for the monitoring period of 01/01/2009 - 30/06/2011 (2009-11689 tons of CO_2eq ,2010 - 34202 tons of CO_2eq ,6 month of 2011 -34884 tons of CO_2eq). Our opinion relates to the project's GHG emissions and resulting GHG emission reductions reported and related to the approved project baseline and monitoring, and its associated documents.

Report No.: UKRAINE-ver/0358/2011	Subject Group: JI	
Project title: "Implementation of energy saving measures at PJSC «Lysychanskiy glass factory «Proletary»		
Work carried out by: Oleg Skoblyk – Team Leader, Lead verifier Vyacheslav Yeriomin – Team Member, Verifier		
Work reviewed by: Ivan Sokolov – Internal technical reviewer		
Work approved by: Flavio Gomes – Operational Manager		
Date of this revision: 16/09/2011	Rev. No.: 01	Number of pages: 37

Bureau Veritas Certification Holding SAS

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1 INTRODUCTION

VEMA S.A. has commissioned Bureau Veritas Certification to verify the emissions reductions of its JI project "Implementation of energy saving measures at PJSC «Lysychanskiy glass factory «Proletary» (hereafter called "the project") in Lysychansk city, Ukraine.

This report summarizes the findings of the verification of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting, as well as the host country criteria.

The verification covers the period from January 1, 2009 to June 30, 2011.

1.1 Objective

Verification is the periodic independent review and ex post determination by the Accredited Independent Entity (AIE) of the monitored reductions in GHG emissions during defined verification period.

The objective of verification can be divided in Initial Verification and Periodic Verification.

UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

1.2 Scope

The verification scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

The verification is not meant to provide any consulting towards the Client. However, stated requests for clarifications, corrective and/or forward actions may provide input for improvement of the project monitoring towards reductions in the GHG emissions.

1.3 Verification Team

The verification team consists of the following personnel:

Oleg Skoblyk

Bureau Veritas Certification Team Leader, Climate Change Lead Verifier

Vyacheslav Yeriomin

Bureau Veritas Certification Team Member, Climate Change Verifier

This verification report was reviewed by:

Ivan Sokolov
Bureau Veritas Certification Internal Technical Reviewer

2 METHODOLOGY

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a verification protocol was customized for the project, according to the version 01 of the Joint Implementation Determination and Verification Manual, issued by the Joint Implementation Supervisory Committee at its 19 meeting on 04/12/2009. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from verifying the identified criteria. The verification protocol serves the following purposes:

- It organizes, details and clarifies the requirements a JI project is expected to meet;
- It ensures a transparent verification process where the verifier will document how a particular requirement has been verified and the result of the verification.

The completed verification protocol is enclosed in Appendix A to this report.

2.1 Review of Documents

The Monitoring Report (MR) submitted by VEMA S.A. and additional background documents related to the project design, baseline, and monitoring plan, i.e. country Law, Project Design Document (PDD), Determination Report of the project prepared by Bureau Veritas Certification Holding SAS No. UKRAINE-DET/0292/2011 rev.01 dated 05/08/2011, Guidance on criteria for baseline setting and monitoring, Host party criteria, the Kyoto Protocol, Clarifications on Verification Requirements to be Checked by an Accredited Independent Entity were reviewed.

The verification findings presented in this report relate to the Monitoring Report for the period from 01/01/2009 to 30/06/2011, version 01 as of August 16, 2011 and version 02 as of September 06, 2011 and the project as described in the determined PDD.

2.2 Follow-up Interviews

On 22/08/2011 Bureau Veritas Certification verification team visited the project implementation site (PJSC «Lysychanskiy glass factory «Proletary») and performed on-site interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of PJSC «Lysychanskiy glass factory «Proletary» and VEMA S.A. were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
PJSC «Lysychanskiy glass factory «Proletary»	➢ Organizational structure ➢ Responsibilities and authorities ➢ Roles and responsibilities for data collection and processing ➢ Implementation Schedule ➢ Installation of equipment ➢ Data logging, archiving and reporting ➢ Metering equipment control ➢ Metering record keeping system, database ➢ IT management ➢ Training of personnel ➢ Quality management procedures and technology ➢ Internal audits and check-ups
Consultant: VEMA S.A.	➢ Baseline methodology ➢ Monitoring plan ➢ Monitoring report

2.3 Resolution of Clarification, Corrective and Forward Action Requests

The objective of this phase of the verification is to raise the requests for corrective and forward actions as well as clarification requests and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the GHG emission reduction calculation.

If the Verification Team, in assessing the monitoring report and supporting documents, identifies issues that need to be corrected, clarified or improved with regard to the monitoring requirements, it should

raise these issues and inform the project participants of these issues in the form of:

(a) Corrective action request (CAR), requesting the project participants to correct a mistake that is not in accordance with the monitoring plan;

(b) Clarification request (CL), requesting the project participants to provide additional information for the AIE to assess compliance with the monitoring plan;

(c) Forward action request (FAR), informing the project participants of an issue, relating to the monitoring that needs to be reviewed during the next verification period.

To guarantee the transparency of the verification process, the concerns raised are documented in more detail in the verification protocol in Appendix A.

3 VERIFICATION CONCLUSIONS

In the following sections, the conclusions of the verification are stated.

The findings from the desk review of the original monitoring documents and the findings from interviews during the follow up visit are described in the Verification Protocol in Appendix A.

The Clarification, Corrective and Forward Action Requests are stated, where applicable, and are further documented in the Verification Protocol in Appendix A. The verification of the Project resulted in 10 Corrective Action Requests, and 1 Clarification Request.

The number between brackets at the end of each section corresponds to the DVM paragraph.

3.1 Remaining issues and FARs from previous verifications

There are no any remaining CRs and FARs from previous verifications.

3.2 Project approval by Parties involved (90-91)

The project obtained approval by the Host party (Ukraine) on 15/09/2011 (Letter of Approval #2572/23/7 issued by the State Environmental Investment Agency of Ukraine as of 15/09/2011).
Written project approval by Switzerland (the party – buyer of emission reduction units) has been issued by the NFP of this Party (Letter of

Approval # J294-0485 issued by the Federal Office for the Environment (FOEN) of Switzerland dated 25/07/2011).

The abovementioned written approvals are unconditional.
The identified areas of concern as to project approval by the parties involved, project participants response and BV Certification's conclusion are described in Appendix A to this report (refer to CAR 01).

3.3 Project implementation (92-93)

The main objective of the project that is being implemented at PJSC «Lysychanskiy glass factory «Proletary» is greenhouse gases emission reductions due to the use of alternative energy resources in the course of company's production activity and its modernization by using up-to-date technologies. Alternative energy resources include effluent furnace gases of glass-melting furnaces that are used for additional generation of heat, which would be generated by old boilers in steam boiler-houses in case of absence of the project. In addition the project's purpose is greenhouse gases emission reductions due to company modernization that provides for introduction of up-to-date technologies in production of float glass and leads to decrease in energy sources use by decrease of specific fuel and electric energy consumption for product unit manufacturing. The reduction of consumption of the electric energy, which is produced in power system of Ukraine, will lead to the decrease of fossil fuel combustion for electricity production, and as a result to the greenhouse gas emission reduction.

The reconstruction measures under the project include three sub-projects.

A project activity is divided into the following subprojects:

Subproject No.1. Utilization of furnace effluent gases.
Due to furnace gases utilization such heat is generated, for production of which fossil fuel (natural gas) would be applied in case of absence of the project activities.
According to the implementation schedule 2 water-heating HRSGs of KUV-EM-2,1-0,6 type with capacity of one water-heating HRSG equal to 2.1 MW (fume gases after glass furnace are used) were installed in the workshop № 2-2 (production 2). Temperature of heat carrier in the heating system is -85-900 C and 55-650C for hot water supply. Gas with the temperature of 420°C and in the quantity of 20000 m^3/hour is extracted to the common retention gas pipe. In HRSGs the water is heated up to the temperature of 105°C for own needs of production. Then the fume gases are extracted by smoke exhauster to the chimney with the height of 80 m. Height of the pipe is calculated based on conditions of harmful emissions dispersion in atmospheric air. The HRSGs are the heat exchangers of pipe-in-pipe type. The HRSGs utilize heat of combustion products of glass

furnaces. Quantity of utilized furnace gases depends on production volume. Quantity of generated steam (for production 2 – heat) is measured by the meters.

Subproject No.2. Implementation of up-to-date line of float-glass production (production 2).

The activities provide for decrease of electric energy and natural gas consumption due to implementation of the up-to-date production line that consumes less energy resources. Decrease in consumption of electric energy that is needed in the course of production process will lead to decrease of fossil fuel consumption for electric energy generation within the network, as well as decrease of natural gas consumption will also result in GHG emission reductions.

According to the implementation schedule the up-to-date workshop (line) for production of large-size float-glass was installed and commissioned. This workshop contains the following areas:

- tunnel for mixture supply and cullet;
- melting area;
- formation area;
- fritting and cutting area;

Technological equipment:

- Glass furnace with capacity of 350 tons / day;
- Molten pool with the capacity of 350 tons / day;
- Annealing lehr with the capacity of 350 tons / day;
- Air cooling of furnace and molten glass;
- Protective atmosphere station;
- Internal gas supply;
- External gas supply.

Subproject № 3. Modernization of existing float – glass production (production 1).

Subproject provides for decrease of specific electricity and natural gas consumption due to rehabilitation of functioning capacities: use of up-to-date models of burners, change of furnace geometry, application of frequency regulators on electrical equipment of the workshops and introduction of electrical heating of glass melts. Decrease in specific consumption will result in decrease in electric power consumption and natural gas utilization resulting in reduction of GHG emissions. In addition the project will ensure additional benefits, for example, economic efficiency, labor protection, and stimulus for introduction of similar projects at other industrial companies of Ukraine.

According to the implementation schedule the existing power capacities were reconstructed:

- The furnace walls made of high-fireproof materials were installed;
- The volumes of regenerator filling were increased,

- The new constructions of burners with expansion of the port route were installed
- The insulation of bottom and walls was reinforced and the pool depth was decreased,
- The ASECCA (automated system of electricity consumption commercial accounting) with the modern meters of high accuracy of metering for differential recording, transfer and storage of the information about electricity was installed;
- The frequency converters in blow fans of glass furnace No. 3 that make it possible to regulate the performance (add) of the fan were installed.

The project operation was started in December 2008 with the first measures on implementation of the up-to-date line of float-glass production (production 2) and on installation of furnace gases HRSGs after glass furnace #2-2). Because of the fact that implementation of measures under the project commenced at the end of 2008, which was determined as a baseline year, in view of conservative approach the emission reductions generated were not accounted in the project.

The major project activity implementation during the period of January 2009 – June 2011 is presented in the table below:

Table 2. Project implementation status during January 2009 – June 2011

	Name of stage	Date of Start	Date of finish
1.	**Subproject No.1. Utilization of furnace effluent gases.**		
	The installation of HRSG after glass furnace in the workshop №2-2	01/01/2008	04/12/2008
2.	**Subproject No.2. Implementation of up-to-date line of float-glass production (production 2).**		
	The up-to-date workshop (line) for production of large-size float-glass was installed and commissioned	01/01/2008	04/12/2008
3.	**Subproject № 3. Modernization of existing float – glass production (production 1).**		
	The furnace walls using high-fireproof materials were installed	01/02/2009	01/11/2010
	The volumes of regenerator filling were increased	01/02/2009	01/11/2010
	The new constructions of burners with expansion of the port route were installed	01/02/2009	01/11/2010

	The insulation of bottom and walls was reinforced and the pool depth was decreased	01/02/2009	01/11/2010
	The ASECCA (automated system of electricity consumption commercial accounting) and commercial recording of electricity were implemented	01/02/2009	01/11/2010
	The frequency converters in blow fans of glass furnace No. 3 were installed	01/02/2009	01/11/2010

The project measures are being implemented according to the implementation schedule presented in the determined PDD ver.02.

The starting date of the crediting period did not change and remains the date of the first generated emission reduction units, namely: January 01, 2009.

The Monitoring System is in place and operational.
The monitoring equipment such as electricity meters, gas meters, generated heat meters and others are in place and comply with the industrial standards of Ukraine. All monitoring equipment is covered by the detailed verification (calibration) plan and is verified with periodicity, established by its manufacturer.

The project implementation doesn't provide for any negative impacts on environment. The only impact on environment is dismantled equipment, which will be further used as secondary material.
PJSC «Lysychanskiy glass factory «Proletary» has all necessary reports, permissions, limits and licenses required by Ukrainian legislation.

Implementation of this project allows for improvement of quality level of produced glass and reduction of specific consumption for its production. Experience of the employees of PJSC «Lysychanskiy glass factory «Proletary» allow for minimization of occurrence of emergency situations in the course of this project implementation.

The identified areas of concern as to project implementation, project participants response and BV Certification's conclusion are described in Appendix A to this report (refer to CAR 02 and CAR 03).

3.4 Compliance of the monitoring plan with the monitoring methodology (94-98)

The monitoring occurred in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website.

For calculating the emission reductions, key factors such as electricity consumption, fuel consumption, heat generation, volume of output, quality of produced goods, operation mode of furnaces, experience in implementation of measures provided for by the project, existing practice in Ukraine in this sphere, financial costs and experience in the sphere, the activity level of the project and the emissions as well as risks associated with the project were taken into account, as appropriate.

Data sources used for calculating emission reductions such as appropriately calibrated metering equipment, the study of standardized emission factors for the Ukrainian electricity grid are clearly identified, reliable and transparent.

Emission factors used for emission reductions calculations were selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice. Carbon emission factors (EF) for electricity consumption were set in accordance with the Order # 62 of the National Environmental Investment Agency of Ukraine "On approval of specific carbon dioxide emission factors in 2008" dated 15/04/2011, Order # 63 of the National Environmental Investment Agency of Ukraine "On approval of specific carbon dioxide emission factors in 2009" dated 15/04/2011, Order # 43 of the National Environmental Investment Agency of Ukraine "On approval of specific carbon dioxide emission factors in 2010" dated 28/03/2011 and Order # 75 of the National Environmental Investment Agency of Ukraine" On approval of specific carbon dioxide emission factors in 2011" dated 12/05/2011.

The calculation of emission reductions is based on conservative assumptions and the most plausible scenarios in a transparent manner.

The identified areas of concern as to the compliance of the monitoring plan with the monitoring methodology, project participants response and BV Certification's conclusion are described in Appendix A to this report (refer to CAR 04 and CL 01).

3.5 Revision of monitoring plan (99-100)

Not applicable.

3.6 Data management (101)

The data and their sources, provided in monitoring reports, are clearly identified, reliable and transparent.

The implementation of data collection procedures is in accordance with the PDD and the monitoring plan, including the quality control and quality assurance procedures.

The function of the monitoring equipment, including its calibration status, is in order.

According to the existing legislation "On metrology and metrological activity" all metering equipment in Ukraine shall conform to stated requirements of corresponding standards and be calibrated periodically. Flow meters were calibrated by Lysychansk Center of Meters Standardization, Metrology and Certification. Verification of commercial electric meters of PJSC «Lysychanskiy glass factory «Proletary» was executed by Lysychanskstandardmetrology. The project complies with legal requirements to the calibration and verification.

The actual data and records used for the monitoring are maintained in a traceable manner.
The data collection and management system for the project is in accordance with the PDD and the monitoring plan.

The project and baseline emissions subject to monitoring relate to the electricity and fuel (natural gas) consumption by the production #1 and production #2, additional heat generation from alternative energy resources by the HRSGs. The baseline emissions are determined based on historical values of specific electricity and natural gas consumption per unit of output in the period before the reconstruction (considered as a baseline year) and actual monitored value of electricity and natural gas consumption, heat generation and amount of output in the reporting period.

The monitoring procedure provides for:

1) Metering of electricity consumption by PJSC «Lysychanskiy glass factory «Proletary»;
2) Metering of natural gas consumption by PJSC «Lysychanskiy glass factory «Proletary»;
3) Metering of heat generation from alternative energy resources by the HRSGs of PJSC «Lysychanskiy glass factory «Proletary»;
4) Metering of output by PJSC «Lysychanskiy glass factory «Proletary».

Parameters which are monitored throughout the crediting period are metered for each separate production that is production 1 for the subproject #3 and production #2 for the subprojects #1 and #2.

Based on the obtained data that are subject to metering and control PJSC «Lysychanskiy glass factory «Proletary» prepares the following documents:

- Electricity and fuel consumption report under the form 11-MTP, that is signed by PJSC «Lysychanskiy glass factory «Proletary» board chairman and submitted to Lysychansk regional state administration.

PJSC «Lysychanskiy glass factory «Proletary» collects and keeps the data relating to electricity consumption, gas consumption, output and heat generation in the forms of production reports.
Structure of monitoring data collection at PJSC «Lysychanskiy glass factory «Proletary» is the following:

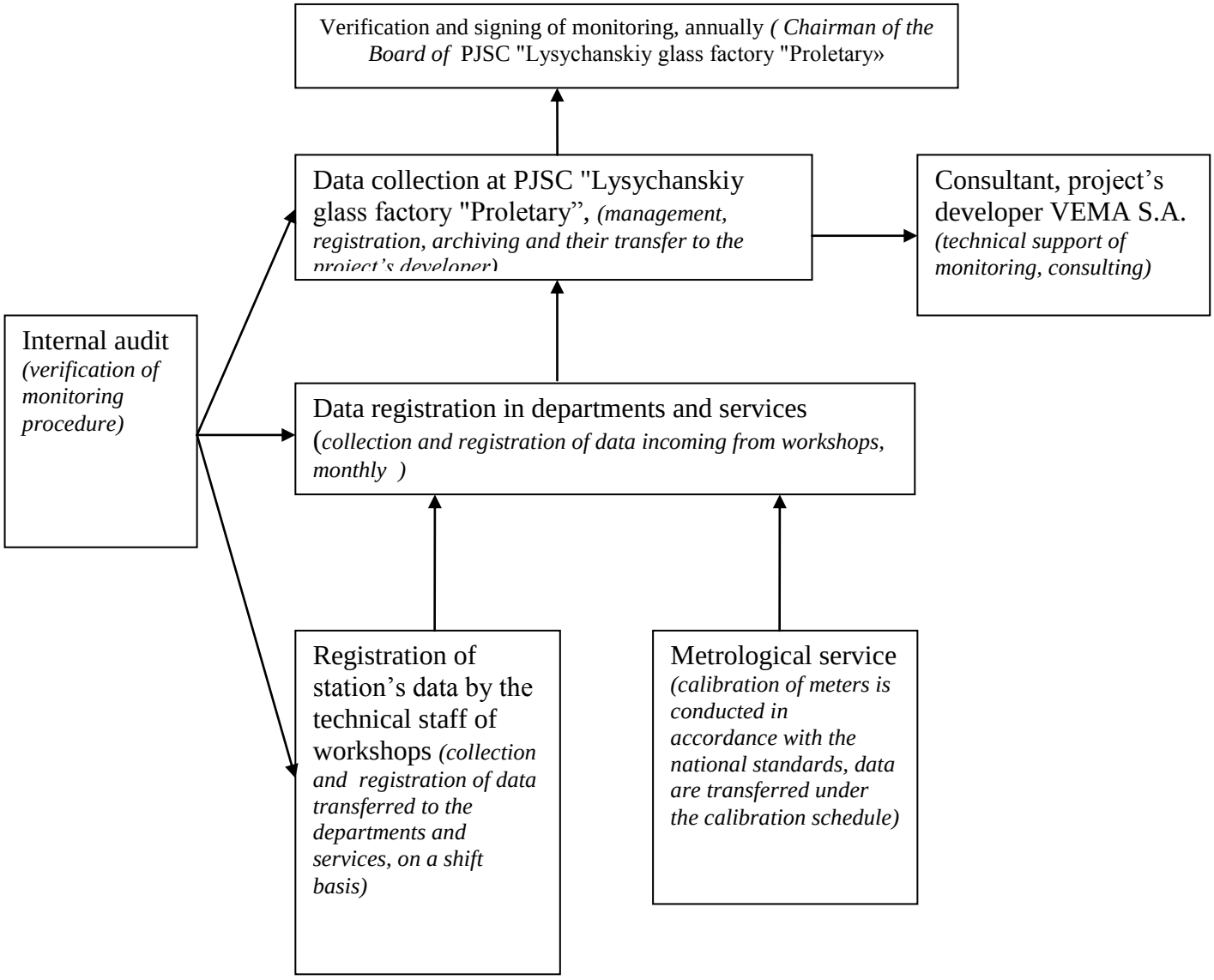

Figure 1. Structure of monitoring data collection

All necessary information for monitoring of GHGs emission reductions is stored in paper or/and electronic formats and will be saved till the end of

the crediting period and for two years after the last operation with ERUs from the project.

The Monitoring Report rev.02 provides sufficient information on the assigning roles, responsibilities and authorities for implementation and maintenance of monitoring procedures including control of data. The verification team confirms effectiveness of the existing management and operational systems and found them eligible for reliable project monitoring.
The identified areas of concern as to Data management, project participants response and BV Certification's conclusion are described in Appendix A to this report (refer to CAR 05, CAR 06, CAR 07, CAR 08, CAR 09, CAR 10).

3.7 Verification regarding programmes of activities (102-110)

Not applicable.

4 VERIFICATION OPINION

Bureau Veritas Certification has performed the 1st periodic verification for the period of 01/01/2009 – 30/06/2011 of the "Implementation of energy saving measures at PJSC «Lysychanskiy glass factory «Proletary» project in Ukraine, which applies JI specific approach. The verification was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The verification consisted of the following three phases:

i) desk review of monitoring reports, project design and the baseline and monitoring plan;
ii) follow-up interviews with project stakeholders;
iii) resolution of outstanding issues and the issuance of the final verification report and opinion.

The management of VEMA S.A. is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions of the project on the basis set out within the project Monitoring and Verification Plan indicated in the final PDD version 02 and the revised monitoring plan. The development and maintenance of records and reporting procedures are in accordance with that plan, including the calculation and determination of GHG emission reductions from the project, is the responsibility of the management of the project.

Bureau Veritas Certification verified the Project Monitoring Report, version 02, for the reporting period of 01/01/2009 – 30/06/2011 as

indicated below. Bureau Veritas Certification confirms that the project is implemented according to the determined PDD. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is generating GHG emission reductions.

Bureau Veritas Certification confirms that the GHG emission reduction is calculated without material misstatements. Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the approved project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period: From 01/01/2009 to 31/12/2009

Baseline emissions	: 77228	t CO_2 equivalent;
Project emissions	: 65539	t CO_2 equivalent;
Emission Reductions	: 11689	t CO_2 equivalent.

Reporting period: From 01/01/2010 to 31/12/2010

Baseline emissions	: 148996	t CO_2 equivalent;
Project emissions	: 114794	t CO_2 equivalent;
Emission Reductions	: 34202	t CO_2 equivalent.

Reporting period: From 01/01/2011 to 30/06/2011

Baseline emissions	: 135150	t CO_2 equivalent;
Project emissions	: 100266	t CO_2 equivalent;
Emission Reductions	: 34884	t CO_2 equivalent.

Total in Reporting monitoring period: From 01/01/2009 to 30/06/2011

Baseline emissions	: 361374	t CO_2 equivalent;
Project emissions	: 280599	t CO_2 equivalent;
Emission Reductions	: 80775	t CO_2 equivalent.

5 REFERENCES

Category 1 Documents:
Documents provided by project participants that relate directly to the GHG components of the project.

/1/ Monitoring Report for the period from 01/01/2009 to 30/06/2011, version 01, dated August 16, 2011

/2/ Monitoring Report for the period from 01/01/2009 to 30/06/2011, version 02, dated August 18, 2011

/3/ Supporting document 1 “Calculation of tCO_2e emission reductions due to electric energy saving at the PJSC «Lysychanskiy glass factory «Proletary» (Excel file)

/4/ Supporting document 2 "Determination of carbon dioxide emission factor (EF) for electricity consumption for the monitoring period"

/5/ Supporting document 3 “Measuring equipment”

/6/ PDD “Implementation of energy saving measures at PJSC «Lysychanskiy glass factory «Proletary», version 02 dated 14/07/2011

/7/ Determination Report by Bureau Veritas Certification Holding SAS No. UKRAINE-DET/0292/2011 “Implementation of energy saving measures at PJSC «Lysychanskiy glass factory «Proletary», rev.01 dated 05/08/2010

/8/ Letter of Approval of the Joint Implementation project “Implementation of energy saving measures at PJSC «Lysychanskiy glass factory «Proletary» #2572/23/7 issued by the State Environmental Investment Agency of Ukraine as of 15/09/2011

/9/ Letter of Approval of the JI project “Implementation of energy saving measures at PJSC «Lysychanskiy glass factory «Proletary»# J294-0485 issued by the Federal Office for the Environment of Switzerland dated 25/07/2011

Category 2 Documents:
Background documents related to the design and/or methodologies employed in the design or other reference documents.

/1/ Calibration certificate #19 on measuring complex OVK-PG №108 dated 23/03/2011

/2/ Measuring complex OVK-PG #108 calibration certificate, dated 23/03/2011

/3/ Differential-transformer scheme devise KSD-3/DM calibration certificate dated 14/06/2011

/4/ Differential-transformer scheme devise KSD-3/DM passport

/5/ Form F-7, KSD-3/DM calibration

/6/ Passport and calibration certificate on electric power meter SL7000 #53061404

/7/ Passport and calibration certificate on electric power meter SL7000 #53061430

/8/ Passport and calibration certificate on electric power meter SL7000 #53061420

/9/ Passport and calibration certificate on electric power meter SL7000 #53061421

/10/ Passport and calibration certificate on electric power meter ACE6000 #50065285

/11/ Passport and calibration certificate on electric power meter ACE6000 #50065299

/12/ Passport and calibration certificate on electric power meter GEM133.01.2 #747234

/13/ Passport and calibration certificate on electric power meter GEM133.01.2 #747236

/14/ Passport and calibration certificate on electric power meter SL7000 #53061406

/15/ Passport and calibration certificate on electric power meter ACE6000 #50065295

/16/ Passport and calibration certificate on electric power meter SL7000 #53061394

/17/ Passport and calibration certificate on electric power meter SL7000 #53061401

/18/ Passport and calibration certificate on electric power meter GEM133.01.2 #747235

/19/ Gas flow indicators, flow 1

/20/ Gas flow indicators, flow 2

/21/ Gas logbook on Gas distribution plant

/22/ Commercial electric meters on distributing gear-1

/23/ Electric energy consumption logbook

/24/ Technical electric meters

/25/ Boiler-utiliser job safety instruction

/26/ Boiler-utiliser exhauster frequency converter job instruction

/27/ Boiler-heat utiliser operator workplace

/28/ Boiler-heat utiliser logbook

/29/ Line 1 gas flow values

/30/ Line 2 gas flow values

/31/ Monitoring system

/32/ Permit №4411800000-25 dated 01/07/2008 on stationary sources air pollution

/33/ Permit №4411800000-25b dated 22/07/2010 on stationary sources air pollution

/34/ Form 2-TP on air protection for I quarter 2011

/35/ Report on water protection for I quarter 2011

Persons interviewed:

List of persons interviewed during the verification or persons that contributed with other information that are not included in the documents listed above.

/1/ Dmytro Drozhzhyn – Deputy Head of Executive board of PJSC «Lysychanskiy glass factory «Proletary»

/2/ Yuriy Baranovskiy – Lead Engineer at PJSC «Lysychanskiy glass factory «Proletary»

/3/ Vasyl Voinichenko – Head of Energy Department at PJSC «Lysychanskiy glass factory «Proletary»

/4/ Halyna Kartamysheva – Lead Technologist at PJSC «Lysychanskiy glass factory «Proletary»

/5/ Ekateryna Zimskaya – Lead Ecologist at PJSC «Lysychanskiy glass factory «Proletary»

/6/ Vasyl Babych – Head of Metrology department at PJSC «Lysychanskiy glass factory «Proletary»

/7/ Anatoliy Chumak – Head of production line 2-2 at PJSC «Lysychanskiy glass factory «Proletary»

/8/ Oleksandr Zinchenko – Head of production line 3 at PJSC «Lysychanskiy glass factory «Proletary»

/9/ Nikolay Yaitskyi – Head of production line 4 at PJSC «Lysychanskiy glass factory «Proletary»

/10/ Sergiy Apostolaka – Consultant of company VEMA S.A.

/11/ Oleksandr Pogosov – Consultant of company VEMA S.A.

APPENDIX A: VERIFICATION PROTOCOL

BUREAU VERITAS CERTIFICATION HOLDING SAS

VERIFICATION PROTOCOL

Check list for verification, according to the JOINT IMPLEMENTATION DETERMINATION AND VERIFICATION MANUAL (Version 01)

DVM Paragraph	Check Item	Initial finding	Action requested to project participants	Review of project Participants' action	Conclusion
Project approvals by Parties involved					
90	Has the NFPs of at least one Party involved, other than the host Party, issued a written project approval when submitting the first verification report to the secretariat for publication in accordance with paragraph 38 of the JI guidelines, at the latest?	The project has been approved by both the Host Party (Ukraine) and the Party – buyer of emission reductions (Switzerland). The Letter of Approval #2572/23/7 issued by the State Environmental Investment Agency as of 15/09/2011 and the Letter of Approval J294-0485 issued by Federal Office for the Environment (FOEN) of	**CAR 01**. Please provide documents confirming approval of the project.	All documents confirming approval of the project were submitted to the verification group.	OK

DVM Paragraph	Check Item	Initial finding	Action requested to project participants	Review of project Participants' action	Conclusion
		Switzerland as of 26/10/2010 were presented to the verification team.			
91	Are all the written project approvals by Parties involved unconditional?	Yes, all the written project approvals by Parties involved are unconditional.	See cl.90 above	See cl.90 above	OK
Project implementation					
92	Has the project been implemented in accordance with the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	Implementation of the project activity was realized according to the project implementation schedule described in the project design document. There are no deviations or revisions to the determined PDD	N/a	N/a	OK
93	What is the status of operation of the project during the monitoring period?	The project measures are being implemented according to the implementation schedule presented in the determined PDD ver.02. as of 14/07/2011. The first implementation measures under the project started at the end of 2008. During the	**CAR 02**. Please provide in the MR the information regarding implementation status of all project measures	The MR version 2 provides comprehensive information about implementation measures during the monitoring period of 01/01/2009-30/06/2011.	OK

DVM Paragraph	Check Item	Initial finding	Action requested to project participants	Review of project Participants' action	Conclusion
		monitoring period of January 2009-June 2011 the project was operational and generated emission reduction units, although full completion of installation of all project measures is planned for the end of 2012.	envisaged in the PDD in format dd/mm/yyyy. **CAR 03.** Please provide documents confirming implementation of equipment to be installed under the project.	The Certificate of commissioning of production 2 (up-to-day line of float glass), the Certificate of commissioning of HRSGs and other supporting documents were submitted to the verification group.	
Compliance with monitoring plan					

DVM Paragraph	Check Item	Initial finding	Action requested to project participants	Review of project Participants' action	Conclusion
94	Did the monitoring occur in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	The monitoring process was carried out in accordance with the monitoring plan included in the registered PDD version 02, regarding which the determination has been deemed final and is so listed on the UNFCCC JI website. Data used for calculation of emission reductions are based on information that is confirmed by PJSC «Lysychanskiy glass factory «Proletary» documents.	**CAR 04.** The Monitoring report version 01 provided incorrect reference to "Guidance on criteria for baseline setting and monitoring" is incorrect.	Correct reference to the Guidance was provided in the Monitoring report, version 02.	OK
95 (a)	For calculating the emission reductions or enhancements of net removals, were key factors, e.g. those listed in 23 (b) (i)-(vii) above, influencing the baseline emissions or net removals and the activity level of the project and the emissions or removals as well as risks associated with the project taken into account, as appropriate?	For calculating the emission reductions, key factors such as electricity consumption, gas consumption, heat generation, volume of output, quality of produced goods, operation of furnaces, experience in implementation of measures provided for by	**CL 01.** Please provide information about voltage class of consumed electricity in the technological process.	According to the information provided by the department of Head energy engineer, the company consumed the 1st voltage class	OK

DVM Paragraph	Check Item	Initial finding	Action requested to project participants	Review of project Participants' action	Conclusion
		the project, existing practice in Ukraine in this sphere, financial costs and the activity level of the project and the emissions as well as risks associated with the project were taken into account, as appropriate.		electricity.	
95 (b)	Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent?	Yes, data sources used for calculating emission reductions or enhancements of net removals are clearly identified, reliable and transparent.	N/a	N/a	OK
95 (c)	Are emission factors, including default emission factors, if used for calculating the emission reductions or enhancements of net removals, selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice?	Yes, emission factors, including default emission factors, if used for calculating the emission reductions or enhancements of net removals, are selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice. For calculations carbon dioxide emission factors in accordance with	N/a	N/a	OK

DVM Paragraph	Check Item	Initial finding	Action requested to project participants	Review of project Participants' action	Conclusion
		Order # 62 of the National Environmental Investment Agency of Ukraine "On approval of specific carbon dioxide emission factors in 2008" dated 15/04/2011, Order # 63 of the National Environmental Investment Agency of Ukraine "On approval of specific carbon dioxide emission factors in 2009" dated 15/04/2011, Order # 43 of the National Environmental Investment Agency of Ukraine "On approval of specific carbon dioxide emission factors in 2010" dated 28/03/2011 and Order # 75 of the National Environmental Investment Agency of Ukraine" On approval of specific carbon dioxide emission factors in 2011" dated 12/05/2011 were used.			
Applicable to JI SSC projects only					

DVM Paragraph	Check Item	Initial finding	Action requested to project participants	Review of project Participants' action	Conclusion
96	Is the relevant threshold to be classified as JI SSC project not exceeded during the monitoring period on an annual average basis? If the threshold is exceeded, is the maximum emission reduction level estimated in the PDD for the JI SSC project or the bundle for the monitoring period determined?	N/a	N/a	N/a	N/a
Applicable to bundled JI SSC projects only					
97 (a)	Has the composition of the bundle not changed from that is stated in F-JI-SSCBUNDLE?	N/a	N/a	N/a	N/a
97 (b)	If the determination was conducted on the basis of an overall monitoring plan, have the project participants submitted a common monitoring report?	N/a	N/a	N/a	N/a
98	If the monitoring is based on a monitoring plan that provides for overlapping monitoring periods, are the monitoring periods per component of the project clearly specified in the monitoring report? Do the monitoring periods not overlap with those for which verifications were already deemed final in the past?	N/a	N/a	N/a	N/a

DVM Paragraph	Check Item	Initial finding	Action requested to project participants	Review of project Participants' action	Conclusion
Revision of monitoring plan					
Applicable only if monitoring plan is revised by project participant					
99 (a)	Did the project participants provide an appropriate justification for the proposed revision?	N/a	N/a	N/a	OK
99 (b)	Does the proposed revision improve the accuracy and/or applicability of information collected compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans?	N/a	N/a	N/a	OK
Data management					
101 (a)	Is the implementation of data collection procedures in accordance with the monitoring plan, including the quality control and quality assurance procedures?	The implementation of data collection procedures is in accordance with the PDD and revised monitoring plan, including the quality control and quality assurance procedures. However, the information regarding education, training, internal audit and control is insufficient.	**CAR 05**. Please provide detailed information about the courses, trainings, internal audits and inspections relating to the current JI project, that is being	Information about courses, trainings, internal audits and inspections relating to the JI project was provided in section C.1. and C. 2. of the MR version 02.	OK

DVM Paragraph	Check Item	Initial finding	Action requested to project participants	Review of project Participants' action	Conclusion
			implemented at PJSC «Lysychanskiy glass factory «Proletary», during the monitoring period of (01/01/2009 – 30/06/2011).		
101 (b)	Is the function of the monitoring equipment, including its calibration status in order?	Yes, the function of the monitoring equipment, including its calibration status, is in order. According to the existing legislation "On metrology and metrological activity" all metering devices in Ukraine shall conform to stated requirements of corresponding standards and be calibrated periodically. Flow meters were calibrated by Lysychansk Centre of Meters Standardization, Metrology and Certification.	**CAR 06**. Please provide in Sections B.1.1. and B.1.2. data about the meters used to measure the parameters of the Project.	Information about the meters used to measure the parameters was provided in the MR version 02 in Sections B.1.1. an d B.1.2.	OK

DVM Paragraph	Check Item	Initial finding	Action requested to project participants	Review of project Participants' action	Conclusion
		Verification of commercial electrical meters of PJSC «Lysychanskiy glass factory «Proletary» was executed by Lysychanskstandardmetrology. The project complies with legal requirements to the calibration and verification. However, some data relating to types, producers, classes of accuracy and calibrations/verifications of measurement equipment indicated in the Sectors B.1.1. and B.1.2. of the MR and Supporting document 3 (Excel file) are missing.			
101 (c)	Are the evidence and records used for the monitoring maintained in a traceable manner?	The evidence and records used for the monitoring are maintained in a traceable manner. PJSC «Lysychanskiy glass factory «Proletary» collects and keeps the data relating to electricity consumption, gas consumption, heat	**CAR 07.** Please provide justification documents regarding the data and records used for the monitoring.	Electric energy logbooks, gas consumption logbooks, reports on electricity consumption by workshops, reports on output in 01/01/2009-	OK

DVM Paragraph	Check Item	Initial finding	Action requested to project participants	Review of project Participants' action	Conclusion
		generation, volume of output in the forms of production reports and bills. All necessary information for monitoring of GHGs emission reductions are stored in paper or/and electronic formats and will be saved till the end of the crediting period and for two years after the last operation with ERUs from the project.		30/06/2011 were provided to the verification group.	
101 (d)	Is the data collection and management system for the project in accordance with the monitoring plan?	The data collection and management system for the project is in accordance with the monitoring plan. The verification team confirms effectiveness of the existing management and operational systems and found them eligible for reliable project monitoring.	**CAR 08.** Please provide a description of parameters indicated in the operational structure of data management and data collection (Fig. 8 in the MR version 01) **CAR 09.** Please provide names	Description of parameters was provided in the MR version 02. Names and contact details	OK

DVM Paragraph	Check Item	Initial finding	Action requested to project participants	Review of project Participants' action	Conclusion
			and contact details of people who are responsible for the preparation and submission of the monitoring report. **CAR 10.** The text of the MR version 01 shows the calculation of emissions for the period of 01.01.2009-30.06.2011, but in supporting documents calculation is provided for each year separately (01.01.2009-31.12.2009, 01.0	of people who are responsible for the preparation and submission of the monitoring report were provided in section A.9. of the MR version 02. Relevant corrections is made in the MR version 2.	

DVM Paragraph	Check Item	Initial finding	Action requested to project participants	Review of project Participants' action	Conclusion
			1.2010-31.12.2010, 01.01.2011-30.06.2011). Please provide year-based calculations , as specified in file Excel.		
Verification regarding programs of activities (additional elements for assessment)					
102	Is any JPA that has not been added to the JI PoA not verified?	N/a	N/a	N/a	N/a
103	Is the verification based on the monitoring reports of all JPAs to be verified?	N/a	N/a	N/a	N/a
103	Does the verification ensure the accuracy and conservativeness of the emission reductions or enhancements of removals generated by each JPA?	N/a	N/a	N/a	N/a
104	Does the monitoring period not overlap with previous monitoring periods?	N/a	N/a	N/a	N/a
105	If the AIE learns of an erroneously included JPA, has the AIE informed the JISC of its findings in writing?	N/a	N/a	N/a	N/a
Applicable to sample-based approach only					
106	Does the sampling plan prepared by the	N/a	N/a	N/a	N/a

DVM Paragraph	Check Item	Initial finding	Action requested to project participants	Review of project Participants' action	Conclusion
	AIE: (a) Describe its sample selection, taking into account that: (i) For each verification that uses a sample-based approach, the sample selection shall be sufficiently representative of the JPAs in the JI PoA such extrapolation to all JPAs identified for that verification is reasonable, taking into account differences among the characteristics of JPAs, such as: − The types of JPAs; − The complexity of the applicable technologies and/or measures used; − The geographical location of each JPA; − The amounts of expected emission reductions of the JPAs being verified; − The number of JPAs for which emission reductions are being verified; − The length of monitoring periods of the JPAs being verified; and − The samples selected for prior verifications, if any?				
107	Is the sampling plan ready for publication through the secretariat along with the	N/a	N/a	N/a	N/a

DVM Paragraph	Check Item	Initial finding	Action requested to project participants	Review of project Participants' action	Conclusion
	verification report and supporting documentation?				
108	Has the AIE made site inspections of at least the square root of the number of total JPAs, rounded to the upper whole number? If the AIE makes no site inspections or fewer site inspections than the square root of the number of total JPAs, rounded to the upper whole number, then does the AIE provide a reasonable explanation and justification?	N/a	N/a	N/a	N/a
109	Is the sampling plan available for submission to the secretariat for the JISC's ex ante assessment? (Optional)	N/a	N/a	N/a	N/a
110	If the AIE learns of a fraudulently included JPA, a fraudulently monitored JPA or an inflated number of emission reductions claimed in a JI PoA, has the AIE informed the JISC of the fraud in writing?	N/a	N/a	N/a	N/a

TABLE 2 RESOLUTION OF CLARIFICATION AND CORRECTIVE ACTION REQUESTS

Clarification and corrective action requests issued by the verification team	Ref to checklist question in Table 1	Summary of project participant's response	Verification team conclusion
CAR 01. Please provide documents confirming approval of the project.	90	All documents confirming approval of the project were submitted to the verification group.	Relevant documents have been provided. CAR is closed.
CAR 02. Please provide in the MR the information regarding implementation status of all project measures envisaged in the PDD in format dd/mm/yyyy.	93	Comprehensive information about implementation of measures during the monitoring period of 01/01/2009-30/06/2011 was provided in the MR version 02.	CAR 02 is closed based on the provided information in the MR ver.02.
CAR 03. Please provide documents confirming implementation of equipment to be installed under the project.	93	The Certificate of commissioning of production 2 (modern line of float glass), the Certificate of commissioning of HRSGs and other supporting documents were submitted to verification group.	Relevant documents have been provided. CAR is closed.
CAR 04. The Monitoring report version 01 provides incorrect reference to "Guidance on criteria for baseline setting and monitoring".	94	Correct reference to the Guidance was provided in the Monitoring report, version 02.	Corrections were made, the issue is closed.

CAR 05. Please provide detailed information about the courses, trainings, internal audits and inspections relating to the current JI project, that is being implemented at PJSC «Lysychanskiy glass factory «Proletary», during the monitoring period of (01/01/2009 – 30/06/2011).	101 (a)	Information about courses, trainings, internal audits and inspections relating to the current JI project was provided in sections C.1. and C.2. of the MR version 02.	CAR 05 is closed based on the provided information in the MR ver.02.
CAR 06. Please provide in Sections B.1.1. and B.1.2. data about the meters used to measure the parameters of the Project.	101 (b)	Information about the meters used to measure the parameters was provided in the MR version 02 in Sections B.1.1. and B.1.2.	The issue is closed based on the provision of relevant information.
CAR 07. Please provide justification documents regarding the data and records used for the monitoring.	101 (c)	Electric energy logbooks, gas consumption logbooks, reports on electricity consumption by workshops, reports of output in 01/01/2009-30/06/2011 were provided to the verification group.	Relevant documents were provided, the issue is closed.
CAR 08. Please provide a description of parameters indicated in the operational structure of data management and data collection (Fig. 8 in the MR version 01)	101 (d)	Description of parameters was provided in the MR version 02.	The issue is closed based on provision of the relevant information.
CAR 09. Please provide names and contact details of people who are responsible for the preparation and submission of the monitoring report.	101 (d)	Names and contact details of people who are responsible for the preparation and submission of the monitoring report were provided in section A.9. of the MR version 02.	CAR 09 is closed based on the provided information in the MR ver.02.

CAR 10. The text of the MR version 01 shows the calculation of emissions for the period of 01.01.2009-30.06.2011, but in supporting documents calculation is provided for each year separately (01.01.2009-31.12.2009, 01.01.2010-31.12.2010, 01.01.2011-30.06.2011). Please provide year-based calculations , as specified in file Excel.	101 (d)	Relevant corrections were made in the MR version 02.	Corrections were made, the issue is closed.
CL 01. Please, provide the information about voltage class of electricity consumed in the technological process.	95 (a)	According to the information provided by the department of Head energy engineer, the company consumed the 1st voltage class electricity.	Relevant information is provided, the issue is closed.